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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/762,133	01/20/2004	Stephen D. Russell	79934	4127
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32697                      7590                      07/03/2007  
OFFICE OF PATENT COUNSEL  
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EXAMINER
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MARMOR II, CHARLES ALAN

ART UNIT	PAPER NUMBER
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3735

MAIL DATE	DELIVERY MODE
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07/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. <span style="float: right;">#</span> 10/762,133	Applicant(s) RUSSELL ET AL.	
	Examiner Zoe E. Baxter	Art Unit 3735	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 12 March 2007.
- 2a)  This action is FINAL.
- 2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-10, 13 and 15-27 is/are pending in the application.
  - 4a) Of the above claim(s) 17-27 is/are withdrawn from consideration.
- 5)  Claim(s) 13, 15 and 16 is/are allowed.
- 6)  Claim(s) 1-10 is/are rejected.
- 7)  Claim(s) \_\_\_\_\_ is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 20 January 2004 is/are: a)  accepted or b)  objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some \*    c)  None of:
    - 1.  Certified copies of the priority documents have been received.
    - 2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    - 3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1)  Notice of References Cited (PTO-892)
- 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3)  Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5)  Notice of Informal Patent Application
- 6)  Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Amendment*

1. The examiner recognizes the amendments filed March 12, 2007. Claims 1-10, 13, 15 and 16-27 are currently pending in the application. Claims 17-27 were previously withdrawn from consideration. Claims 1 and 13 have been amended and claims 1-10, 13, 15 and 16 have been presented for further consideration on the merits.

### *Claim Objections*

2. Claim 1 is objected to because of the following informalities: --ISFET-- should be changed to --Ion Sensitive Field Effect Transistor (ISFET)--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 3 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Koning et al. (US Patent No. 4534825).

5. Referring to claim 1 Koning et al. teach a probe comprising a housing having an aperture, an ISFET attached to the housing (column 2 lines 57-63), wherein the ISFET has a gate located proximate to the aperture (column 3 line 64-column 4 line 6), a reference electrode attached to the housing proximate to the aperture and a calibrant in

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contact with the gate of the ISFET and with the reference electrode (column 3 lines 33-44).

6. Referring to claim 2 Koning et al. teach a probe wherein the housing and the ISFET are integrally formed (column 2 lines 55-67) in a biocompatible material. It is inherent that the plastic material described by Koning et al. is biocompatible since the catheter is being placed in the body it has to be biocompatible.

7. Referring to claim 3 Koning et al. teach a probe wherein the housing and the reference electrode are integrally formed (column 3 lines 15-32) in a biocompatible material. It is inherent that the plastic material described by Koning et al. is biocompatible since the catheter is placed in the body it has to be biocompatible.

8. Referring to claim 8 Koning et al. teach a probe wherein the probe defines an exterior space that is exterior to the probe (figure 1 reference 11) and wherein at least a portion of the gate and reference electrode are in fluid communication with the exterior space (figure 7 and column 3 line 64-column4 line 24).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koning et al.'825 in view of Abreu (PGPUB 2002/0049389).

11. Referring to claim 4 Koning et al. teach all of the limitations of the claim but fail to teach that the housing is a hermetically sealed encapsulant. Abreu teaches a sensor, which comprises an ISFET and a housing, which is a hermetically sealed encapsulant (page 15 paragraph 0153). Since both sensors use the same ISFET technology and are used in wet locations, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to include a hermetically sealed encapsulant similar to that of Abreu in order to prevent fluid invasion causing problems in the electronics.

12. Referring to claim 9 Koning et al. teach all of the limitations of the claim but fail to teach that the microprobe comprises an electrical power generator. Abreu teaches the use of a battery coupled to the ISFET (page 15 paragraph 0158). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to include a battery similar to that of Abreu in order to provide a power source.

13. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koning et al.'825 in view of Tomita et al. (U.S. Patent No. 5814280).

14. Referring to claim 5 Koning et al. teach all of the limitations of the claim but fail to teach that the ISFET and reference electrode are integrally formed on the substrate, wherein the ISFET and reference electrode are monolithically integrated and the ISFET and the microelectrode are located on a portion of the substrate that includes the

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aperture. Tomita et al. teach a substrate including an ISFET and a reference electrode above the ISFET (column 4 lines 29-45). It is obvious to have the combination located on a portion of the substrate that includes the aperture in order to introduce the substance being measured to the ISFET to be able to measure the amount of the substance. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to include a substrate similar to that of Tomita et al. in order to make the unit more economical to manufacture (Tomita et al. column 4 lines 52-60).

15. Referring to claim 6 Koning et al. teach all of the limitations of the claims except that associated circuitry can be integrated with the ISFET and the reference electrode. Tomita et al. teach that associated circuitry can be integrated with the ISFET and the reference electrode (column 4 lines 45-51). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to integrate the associated circuitry similar to that of Tomita et al. in order to make the unit more economical to manufacture.

16. Referring to claim 7 Koning et al. teach all of the limitations of the claims except that the integrated circuitry includes a temperature sensing diode. Tomita et al. teach the integrated circuitry includes a temperature sensing diode (column 4 lines 36-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to include a temperature sensing diode similar to that of Tomita et al in order to compensate for drift related to temperature change (Tomita et al. column 4 lines 37-39).

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17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koning et al.'825 in view of Ishikawa et al. (US Patent No. 6447448).

18. Referring to claim 10 Koning et al. teach all of the limitations of the claim but fail to teach that the probe comprises an antenna and capacitor system in which the antenna is coupled to the capacitor and the capacitor is coupled to the ISFET wherein the capacitor is configured to store electromagnetic energy received by the antenna. Ishikawa et al. teach an antenna and capacitor system in which the antenna is coupled to the capacitor and the capacitor is coupled to the ISFET wherein the capacitor is configured to store electromagnetic energy received by the antenna (column 13 lines 33-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the probe of Koning et al. to include the antenna system similar to that of Ishikawa et al. in order to create a system in which no battery is required.

#### ***Allowable Subject Matter***

19. Claims 13, 15 and 16 are allowed. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fail to teach or fairly suggest a microsensor system comprising a cantilever arm attached to an actuator and a microprobe comprising an ISFET and a reference electrode.

#### ***Response to Arguments***

20. Applicant's arguments, see page 7 line 17-page 8 line 2 of the remarks, filed March 12, 2007, with respect to claims 1-10 and 12 have been fully considered and are

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not persuasive. The indicated allowability of original claim 11 is withdrawn in view of the newly discovered reference to Koning et al. (US Patent No. 4534825). Rejections based on the newly cited reference are set forth above.

21. Applicant's arguments, see page 7 lines 17-page 8 line 2 of the remarks, filed March 12, 2007, with respect to claims 13, 15 and 16 have been fully considered and are persuasive. The rejections of claims 13, 15 and 16 under 35 USC 102 and 103 have been withdrawn.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zoe E. Baxter whose telephone number is 571-272-8964. The examiner can normally be reached on Monday-Friday 7:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor II can be reached on 571-272-4730. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Charles A. Marmor, II  
Supervisory Patent Examiner  
Art Unit 3735

ZEB